Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims in the application.

Listing of Claims

1. (currently amended) A method of packet grooming and aggregation within an Ethernet over SONET/SDH system (EOS system), said method comprising:

~~delivering efficient bandwidth per data stream; and~~

receiving data packets each tagged according to an encapsulation scheme and including a port or channel ID;

multiplexing a number of data streams according to respective tags, port or channel IDs of said data packets; and

mapping each said data stream directly to a physical transport interface by tag modification independent of any Layer 2 bridging or Layer 3 routing protocol.

2. (currently amended) The method as claimed in claim 1 wherein,

said multiplexing and mapping step is ~~flexible in that service flow is defined~~ independent of any given physical Ethernet port or ~~Sonet~~ SONET/SDH virtual concatenation groups (VCG) transport pipes so as to allow flexible multiplexing and mapping of said ~~service flow~~ number of data streams among said physical Ethernet ports and SONET/SDH VCG transport pipes and to guarantee quality of service levels of ~~service flow during said flexible mapping~~ flow of said number of data streams.

3. (canceled)

4. (currently amended) An Aggregation/Grooming Engine (AGE) for use within an Ethernet over SONET/SDH system (EOS system), said AGE comprising:

an ingress portion having

an ingress header unit for receiving data from an Ethernet MAC subsystem and extracting 2-tuple ingress search keys including a port or channel ID and an ingress frame tag, wherein said ingress frame tag is according to an ingress frame tag encapsulation scheme;

an ingress lookup engine including a corresponding ingress flow database and coupled to said ingress header unit;

an ingress tag editor coupled to said ingress lookup engine; and

an ingress flow FIFO unit coupled to said ingress tag editor and an encapsulation engine; and

an egress portion having

an egress header unit for receiving data from said encapsulation engine and extracting 2-tuple ingress search keys including a virtual concatenation group ID and an egress frame tag, wherein said egress frame tag is according to an egress frame tag encapsulation scheme;

an egress lookup engine including a corresponding egress flow database and coupled to said egress header unit;

an egress tag editor coupled to said egress lookup engine; and

an egress flow FIFO unit coupled to said egress tag editor and said Ethernet MAC subsystem;

wherein said ingress portion and said egress portion of said AGE provide grooming and aggregation functionality for said EOS system including label lookup, flow buffering, label editing, and flow scheduling.

5. (original) The AGE as claimed in claim 4 wherein said ingress flow FIFO unit and said egress flow FIFO unit are multi-channel FIFOs where each buffers respective data flow for one service flow.

6. (canceled)

7. (original) The AGE as claimed in claim 4 wherein said ingress portion and said egress portion form symmetric ingress and egress paths.

8. (original) The AGE as claimed in claim 4 wherein said ingress lookup engine and said egress lookup engine are integrated into a single bi-directional lookup engine having a corresponding bi-directional flow database that integrates said ingress flow database and said egress flow database.

9. (currently amended) A method of packet grooming and aggregation within an Ethernet over SONET/SDH system (EOS system), said method comprising:

receiving a data packet tagged according to an encapsulation scheme and including a port or channel ID;

providing an input client frame from said data packet to a header unit;

extracting a search key including said port or channel ID and said tag from said input client frame via said header unit;

correlating said search key via a lookup engine to a match in a flow database to determine flow context;

modifying said input frame via a tag editor according to said flow context;

buffering said input client frame via a flow FIFO;

applying ~~appropriate~~ discard policies to said flow FIFO based on said flow context; and

scheduling said input client frame via a scheduler of the flow FIFO for transmission into output channels according to output channel status and flow quality of service parameters.

10. (currently amended) The method of packet grooming and aggregation as claimed in claim 9 wherein said scheduling step occurs in accordance with ~~an AGE flow database~~ said flow context.

11. (currently amended) The method of packet grooming and aggregation as claimed in claim 10 further including the steps of:

receiving said search key,

performing a wildcard linear search against predetermined search key fields of said ~~AGE~~ flow database,

fetching flow context from said ~~AGE~~ flow database, and

outputting said flow context.

12. (original) The method of packet grooming and aggregation as claimed in claim 9 wherein said correlating step occurs in accordance with a combined ingress table and egress table in a bi-directional lookup manner.

13. (currently amended) The method of packet grooming and aggregation as claimed in claim 12 further including the steps of:

receiving said search key,

upon determining an ingress lookup,

performing a first wildcard linear search of said search key against predetermined ingress flow fields of a bi-directional flow database,

fetching flow context from said egress flow fields of said bi-directional flow database,

upon determining an egress lookup,

performing a second wildcard linear search of said search key against predetermined egress flow fields of a bi-directional flow database,

fetching flow context from said egress flow fields of said bi-directional flow database,

modifying a portion of said egress flow fields according to predetermined rules, and

outputting said flow context.

14. (new) The AGE as claimed in claim 4 wherein said ingress frame tag is an 802.1Q tag, a MPLS tag, or a proprietary tag.

15. (new) The AGE as claimed in claim 4 wherein said egress frame tag is an 802.1Q tag, a MPLS tag, a proprietary tag, or a GFP tag.